An Inaugural Thesis,

being

An essay on Blisters.

By Benjn. H. Coates

passed Mar 26. 1818

1818.

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Cantharis vittata.

1. Male 2. Female.

W. W. C. del. & sc. From specimen given me by F. Fay, esq.

Introduction.

Of the importance of Blisters, both in Medicine and Surgery, no one has ever doubted. They are among those primary and indispensable remedies, which a physician would take with him, were he obliged to simplify his apparatus to the greatest possible degree, for the purpose of travelling or inhabiting a savage country. Their utility is as universally acknowledged as it is extensive, and they are most fully entitled, as a means of cure, to the epithet Herculean.

If this is the case, it is in some degree surprising that there should be a great deficiency of writers on the subject. I have, with the exception of Dr. Gough's inaccurate treatise, not been able to find it treated of methodically in any book printed of late years, except works of alphabetical reference alone. One would think it as fully entitled to a place among the Materia Medica as any substance whatever; and, accordingly, the present professor of that branch has afforded it notice proportioned to its merits. Dr. Rush has spoken of the medical application of blisters, in his lectures on therapeutics; and we have it to hope that Dr. Chapman will do the same in his anxiously expected second volume.

a few medicated prescriptions of
doubtful efficacy and connected
with the old doctrines &c

It has often struck me that a new, methodical view might be very usefully made, of the Materia Chirurgica. A variety of remedies would be included in such an arrangement, that are of the most acknowledged importance, but that have not received, as far as I know, from any modern author, a treatment suited to their value. It is true that the French have written on the external application of remedies, called "Methode Iatroleptice;" but the subject seems to have been restricted to those articles which had been formerly used internally. They leave entirely out the various common applications, so much depended on in the local treatment of injury and disease, and content themselves with a few medicated frictions whose efficacy is yet doubtful, and which are connected with the old doctrine of cutaneous absorption. Plenck's Pharmacologie Chirurgicale, the only work I have seen pretending to the subject, is a mere catalogue, diluted with all the pedantry of science that his subject would admit of. It also contains a long catalogue of internal remedies, which, however properly introduced, in strict nomenclatural correctness, have all been treated of in common works on Materia Medica.

The arrangement of the articles used for medicinal application to the skin, need not be very complicated; but such a treatise should include the important subject of Coercentia, such as splints, bandages, &c., which have

He "the good old man" as Dr Styles term,
[illegible] the internal use of a blistering
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[illegible] availed
himself of their [illegible] employment
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been made the subject of books by the French, but of which we have heard only incidentally, in treating of the practice of Surgery. Whether the subject is worthy attention or not, all will probably agree, that the division I have chosen deserves a separate consideration.

Our remedy, it seems, was known to the Greek physicians. Hippocrates, "the good old man," as Boerhaave styles him, though he employed a blistering insect (the mylabrium cichorei of Linneus) in the stomach, never availed himself of their employment externally. The latter, we find from a reference to Le Clerc's history, is to be attributed either to Aretaeus or Archigenes. In looking over long dry lists of citations of authors, the "loads of learned lumber" with which works of the last age abound, the eye must be excused a digressional notice of an unfortunate physician. "Dr. Groenvelt, who published, in vindication of his own practice, a small treatise "de usu Cantharidum usu interno," suffered much by a prosecution for giving them inwardly, being charged with and sued for mal-practice. The issue ruined the unhappy doctor, and taught his envious prosecutors the safety and value of his practice." Quincy's Pharmac. p. 152.

Hosts of authors' opinions, superseded by mod-

In the old books we find named and quoted a great variety of authors who have written on the subject of blisters;

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on practice, yield in real interest to this melancholy story. Medicine, it should seem, like other republics, is not exempt from the reproach of ingratitude. It is to be hoped that the conduct of physicians of the present day, will continue to exhibit proofs of the amelioration of human-kind.

A great variety of authors are named and quoted in the old books, who have written on the subject of blisters; but their experience has been improved on by that of after years, and their remarks are now as completely useless as those of the teachers of any other sciences at the time. Their accounts are full of dreadful stories of haemorrhages, mortifications, &c.; and one* asserts that several pounds of blood were lost from the urethra, in consequence of only carrying a parcel under the coat. There can be surely no use in reciting such tales; and indeed the history of this drug is altogether such a mere mass of pedantry, and so totally devoid of useful inference, that I shall take no further notice of it.

In proceeding to speak of the employment of blisters, I have chosen an order of arrangement, different from that usually employed on such occasions, of describing the article first, and then treating of its medical use. This method may seem the more beautiful, as the more synthetical; but we have learned that analysis is infinitely the

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I shall first state the general effects of bitters on the system, & this will naturally lead to their employment in diseases. After this will follow the consideration of the chemical nature of bitters, and of the properties they were calculated to answer the desired ends: and I will conclude by enumerating several instances.

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On the medical effects of blisters.

The use of blisters forms perhaps, one of the most interesting, as well as most useful objects of pathological contemplation. It includes cases of simple stimulation, sufficiently active upon the general system for its effects to be obvious, and easily submitted to examination, and at the same time so insulated as to be capable of inspection with no risk of confounding its phenomena with those of the processes of health or disease. Dr. Reid,* in endeavouring to establish the first principles of the philosophy of the human mind from contemplation of the simplest phenomena, was induced to make the unexpected choice of the sense of smelling, as the first object of his investigations. He was guided, in this election, not by the prominence and obviousness of the example, but by the slight degree in which it was liable to confusion, from complication and association with others. In like manner, I believe, a large number of the modern principles of stimulus and excitement, will be found to be best illustrated, not by the more casual and revolutionizing effects which remedies produce in the stomach, but by the comparatively unimportant appearances of blisters.

"It seems now to be the prevailing opinion, that these

* Essay on the five senses.

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remedies affect the system, not by absorption, but by acting more or less widely extended excitabilities. The actions produced immediately in a part or the organ to which a stimulating substance is applied, have been attributed to the excitability of the part; or, more at a greater distance, to the medium of sympathy. I fear this is a distinction without a difference. There is, I believe, with the sole exceptions of heat, cold and dryness, no instance of a perceptible action being produced in the fibres to which the stimulus is actually applied. In modern views of the subject various matters, when applied to the surface of the skin, produce heat, pain & dilatation of the calibre of arteries below, with one action entirely new, tending to the separation externally of a fluid, which never was discharged there before. A substance applied to the outside of the skin, produces early and extensive changes in fibres and fluids situated beneath. It is of no importance how we suppose it done; we only know it as a phenomenon of life. Sympathy has been defined action from remote impression; but the expression is indefinite. The only strict meaning which can be applied to the term remote, is that of difference of place. But, without verbal disquisition, action from stimulus is, as far as we know, always similar in its nature and productions.

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It signifies nothing, so long as impression on one fibre causes action in another, whether they are separated by the distance of a hair or six feet. Though the choice of words may safely be left to the Lexicographer, the effects are just the same.

[illegible] difficulty of [illegible] diminished by the hypothesis of absorption. [illegible] [illegible] remarks in the case of a dilatation, but upon that principle, the inner coat could only be supposed to stimulate the inner membrane of the arteries [illegible], of course, could have no opportunity of reaching the muscular fibres of the secretory vessels. In the manner, even we suppose the active matter of cantharides to have entered the secretories, [illegible], we are no nearer the reason why the arteries and other canals undergo such immediate changes. At no rate, after absorption, the medicine is supposed to have entered the blood vessels, the case is the same with that proposed by the Professor.

All we know, in effect, is that such changes do take place, in the application of such causes; and the expression of this is the proper use of the term "excitability." We know just as much of the excitability of a part in a certain stimulus, as one in its immediate neighbourhood, or in part, in actual contact with it. The only question which appears essential is, are the adjacent, the remote and [illegible] by contact. I [illegible] whether the last

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[illegible] we applies [illegible]

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These ideas, [illegible]

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The effects of the [illegible]

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[illegible]ly existing.

term can be with justice applied at all; as, altho' there is no doubt that heat, cold & the hardness resulting from desiccation are applied to the substance of bodies, we have no proof that the actions resulting from them are not produced in the same way as in other cases; that is, by actions on the set of fibres following the application of the cause to another, and not to its own tissue.

These ideas, it is hoped, will appear less aggressive, from their being unencumbered with new modes of expression. They are designed to be expressed in common language, - such as would suggest itself to any person attempting to say the same thing. They are equally innocent of a tendency to improve the words sympathy and association. These powers constitute a part of the excitability.

The effects of the application of a vesicating substance may be divided into local, general & secondary. Inflammation and serous discharge form the first. The second are, according to the state of the system, indefinitely various; and require to be treated of at particular length. The third consist of effects produced by irritation of particular parts occurring in the system; and they are probably referable to pressure and distension of tissues containing nerves. These are chiefly manifested in the bladder, but are produced in various parts, when blisters increase irritation already existing.

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The first of these remedies is very important in surgery. The action it includes consists in a smart inflammation of the part, increasing for some time, and then manifested by effusion of serum. Its effect is propagated considerably beyond the cutis, occasioning a considerable influx of blood to the parts adjacent, and of course destroying any weaker action subsisting there before. In whatever manner it at first acts, - whether by evacuating the adjacent vessels and allowing them to contract, or simply by diminishing the vital power in the part, and rendering it less excitable, - it is pretty general, in consequence that it diminishes all those actions in the immediate neighbourhood that are directly associated with the action of the sanguineous system. It is natural enough to suppose that it has the effect on all; for superficial, on the epidermis, not of this we have no proof. When, however, a free discharge is once established, the effects become very distinct indeed. From the great quantity of fluid evacuated from the vessels, it is evident that, notwithstanding there is still considerable increase of excitement in the same, a great degree of direct debility is induced in all the sanguineous vessels of the neighbouring parts. Inflammation is and the natural circulation are diminished, and the force of established secretions, such as those of mucus and synovia.

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According to the improved doctrine of excitability, which I cannot help feeling much struck, our power would be greatly increased, if a proper natural place [illegible] transmitted, also some part of other systems in conjunctivity with the blood vessels. This will increase the actions of the absorbents & their preponderance over the debilitated secretory vessels. This corresponds with the practical belief of a great number of physicians.

"It is in this way that blisters about the, rheumatalgic joints & limbs, not only diminish the soreness consequent to motion, but often very evidently increase the muscular power. This blister applies to the power cure palsy, - just as in tetanus, - the most violent of all muscular actions, "the bloodvessels are in a state of reduced excitement."* It is not mechanical pressure in a common vessel or a vessel to small & [illegible] a lymphatic that [illegible] explain. It is the [illegible] of vital power in the arteries, & [illegible] systems. A striking case was lately published in the newspapers, of a dropsy cured by powerful bleeding arms. Here too we see how hearing with gutta-serena, tinnitus aurium, &c. are gradually restored to the use of their organs, by depletion. Dissection in many cases shows not the least room for supposing pressure to exist.

The effects of blisters on the system generally are a subject of so much importance and variety that it is [illegible] discussion in [illegible].

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not to attempt things for great for their power. "To
vice of angels and of Gods."

Bitters, like all other stimuli, act differently on
different states of the system. When the excitement does
not differ greatly in quantity from that of health, we
generally produce an excess, which renders it necessary
to premise depletion to a little above the healthy standard.
Without bitters, however, may be produced without any
remarkable increase of volume in the pulse. This is
seen in the hospital, where the more active precautions were used severe pain was produced sufficient to
deprive the patient of sleep, even for 2 or 3 days, while the
sufferers were discharging large considerable anxiety,
but of the whole free and costiveness. Of these, only
one was remarkable for an increase of pulse. In the
first case it indicated a degree of debility; and after a small
bleeding on the idea of depression, did not rise.
In low typhoid fevers the use of bitters to raise the powers
of the system is one of the sinews of medicine.
Still however their effects are more remarkable as a means
of equalizing excitement, than of raising it generally.
They are particularly of advantage in cases of determi-

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relating to viscera, including the febrile state of the alimentary canal. They raise and soften the pulse, induce moisture on the skin & proportionally diminish the disease.

The termination of blisters in gangrene, either dry or common, it has never fallen to my lot in the Hospital to see; tho' they have been applied in a great number of cases in which the system was prostrated very low. I have seen them look extremely dark or venous; the inflamed rete mucosum appear in black threads. But this was in a case of moderate excitement, and was soon relieved by a poultice.

Of the blisters of cantharides we use for the purpose of rubefaction alone it has been recommended by a writer in the French Dictionary, (Barbier. Art. Vesicat.) to remove the blister after 7 or 8 hours, and reapply it in some other place. I cannot, however, see the use of your professing that blisters, when applied for a few hours, will draw very well unless a poultice. An experienced nurse in the Hospital told me she had often seen them do so under dressings of simple cerate. In diseases of high action, blisters are acknowledged to do mischief. When applied to parts remote from the seat of inflammation, they increase the evil thro' the medium of the general system. But when near the inflammation they seem to coalesce with the disease & form an active cure. The preventive is depletion; which, when there is urgent necessity for the blister, is in some

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affections of the lungs, should often be repeated by blistering during the time in which the blister is drawing.

In the depressed state of the system, blisters are not, I believe, intentionally used. In [illegible] the yellow fever [illegible] blistering. This, I have, on [illegible] occasions, [illegible] hemorrhages from blisters occur. I think, in such cases, have a useful effect.

The indirect effects of these remedies are of two kinds. The one the result of an increase of an irritation already existing, and often near the place of application; the other the mysterious phenomenon of sympathy.

When these agents are applied to peculiarly irritable constitutions, or I believe are used in inflammatory fevers, they inflame with violence, and the reaction of this has a very considerable effect on the febrile symptoms. [illegible] never designed it is to be cured by attention to the system and a poultice.

Blisters on the head always produce more irritation & fever than on any other part. This arises in part from the roots of the hair confining the inflamed skin, and in part from the proximity of the brain. When the encephalon is diseased, and the arteries are not reduced in size, blisters produce violent symptoms. It is a general remark in the Hospital that lunatics are always more noisy while blisters are drawing on the head; tho' the

remark has not been made of other parts.
Blisters to the inferior rectum often produce great distress, when applying one to the sacrum will give relief.
All instances, of which there are many where phlegmasiæ are made worse by blisters offer examples of their indirect action.

Strangury occurs irregularly, and with no relation to the quantity of cantharides applied, nor to the place, without excepting the alimentary canal. It is said to be often prevented by applying a piece of fine muslin over the blister. If this be the case, I am entirely at a loss to explain it.

I had thought that [illegible] strangury [illegible] had [illegible] in this direction, [illegible] it did to that of absorption, quite inexplicable.

In the account of a chemical analysis of cantharides [illegible] it will be shown that several products afforded by [illegible] cantharides are [illegible] there is an analogy between two of the most important. Here lies [illegible] the demonstration of Griffith that removing blisters before the [illegible] prevents strangury are the most pointed arguments [illegible] the doctrine of absorption.

This severe affection is in general, ameliorated by

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plentiful draughts of water, and so continued, appears in a greater number of instances. Dr. Forbes says, however, that it has occur in some cases where mucilaginous drinks had been given from the beginning. Duval says that it may sometimes be prevented from rising on the head, by leaving exposed for a minute after taking. This inconvenient delay has been shortened by a Chapman with satisfaction. Dr. Griffith, a sufficiently experienced practitioner to advise on any subject, prevents strangury by removing the blister just before the expiration of the cuticle. By the latter considered as a mode of absorption being the cause.

Pain is the principal means by which strangury puts the system. Though this accompanies all blisters, it is often unnoticed; but when from strangury, it has been found by Rush to promote the cure of the yellow fever.

Hence a blister seems, in fevers, sufficiently obvious from what goes before, to require no particular detail. The prescription in particular circumstances must, after a thorough knowledge of the disease, be left to the practitioner's own judgment. As an example of this, we have Dr. Rush, in one of the epidemic yellow fevers, found advantage from using this remedy before the system had descended to the sistering point, for the express purpose of producing

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a more powerful disease where they were placed.

[illegible] continued [illegible] a [illegible] them in [illegible]. To produce a powerful [illegible] apoplexy, a large [illegible] stone.

Gangrene, we are told, sometimes, occurs when it could [illegible] possibly suspected. Where, from the lowness of the sys- [illegible] cause [illegible] terminate [illegible], by [illegible] placing [illegible] the [illegible]

In Phlegmasia our remedy is of the first importance. In all these the caution is requisite, and of necessity proportioned to the value of the part, to deplete sufficiently before their use. In the Hospital it has been a frequent practice, with evident advantage, to bleed topically by cupping glasses, previous to blistering. This has been principally done by Dr. Hawthorne, and most used in cases of accidental unconsciousness or insanity. It is from neglect or insufficient previous depletion that authors have disparaged the utility of the remedy. With this precaution it may be fairly [illegible] in all.

With phlegmasia of the head I rank Hydrocephalus, and mania recovery.

In epilepsy, convulsions of children, even from pressure during labour in [illegible] and in [illegible], [illegible] lightness. [illegible] apoplexy, [illegible] and [illegible] [illegible] the [illegible]. [illegible] Klapp applied in one [illegible] part, and thinks it is an advantage.

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[illegible] Dr. Dick has used by [illegible] Prescott is so powerfully [illegible] in [illegible] affections, when applied over the course of the nerves, at the back of the neck.

In epistaxis Dr. Dick applies them over the eye, covering the eyes of the lids with a piece of [illegible] paper, [illegible] [illegible] the [illegible] may be applied to the [illegible] of the meatus auditorius with perfect safety, introducing [illegible] [illegible] [illegible] [illegible] [illegible].

In thoracic inflammations they are invaluable, subject to the general rules, [illegible] [illegible] [illegible] [illegible] the pain as possible.

In Rheumatism they are often required in great number, and frequently repeated. [illegible] [illegible] [illegible] in removing the stiffness and weakness of the joints and limbs, which Dr. Huth calls rheumatic in. There is a state of palsy closely approaching to it, [illegible] [illegible] a sequela of the original disease, [illegible] [illegible] [illegible] have been applied to the limb. [illegible] of the severest [illegible] [illegible] [illegible], were, however, [illegible] [illegible] [illegible] unavailing.

Mezza relates a case of a pain in the arm, resisting general remedies & produced by a repelled [illegible], [illegible] cured by blistering. Tous, this has not been [illegible].

In gout, their principal utility is in the atta-

cedent form, applied to the feet to produce revulsion, with the effect of translating the disease.

In phlegmonic tonsillitis, Dr. Dorsey says that most people would scarify the tonsils. In C. pustulosa an opinion must be applied to the scrotum to prevent absorption of the testicle from sympathy.

In the Egyptian ophthalmia it is a common practice to blister the whole head.

In the dermal inflammations that follow parturition, blisters form a part of the approved treatment. But they offer a much more certain remedy in inflammations of the mammæ.

They are used in menorrhagia and in chronic rheumatism.

In the Brolle in, they are seldom employed in catarrh; but in affections of the bowels they become of the first importance. The case is here not the same as with the phlegmasiæ. There is a powerful reciprocal sympathy between the skin and the alimentary canal, which these remedies, in particular salts of the system are, even only adapted to excite.

In diarrhœa whenever there is pain resisting common treatment, blisters are useful; and for this reason I have placed the disease here. Dr. Dorsey puts them generally on the wrists, but in violent attacks on the abdomen.

In the debility of adults and in chronic inflammation we remember more efficient to cure or relieve them for pain and protract the limit in this infancy.

In most of the scrofulous they are used to palliate more symptoms; the peculiar circumstances must be remembered in hysteria or a morbid cough.

In blindness deafness, & cutaneous swellings, it appears and they are of the highest importance in the treatment of the prominent symptoms that of service and frequently produce with the rest, a prominent inscription. In some cases the line of discharge is not thought sufficient, and issues or setons are introduced in them. These cases are usually harmonent and require a more constant discharge. A powder made of the flowers of water kept moistened with saliva.

In cutaneous complaints they appear to be of service merely by stimulating new action stronger than the old. In this principle they cure scurvy and impetigo, ligament tumors and indolent ulcers. In some cases, as in the ulcers, where skin should adhere, great use is made from stimulating power in mortification or weak ointment with powdered extract of catechu.

In the debility produced by extensive burns Dr. Scott recommends Cantharides in turpentine and lime

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Dr. Darwin [illegible]
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mixed with basilicon, I view the local treatment.

The use of blisters in mortification is too well known to be repeated. Dr. Pirie tells us that in case without inflammation the remedy did harm. In different instances infinite laughing. Mortification seems particularly within the reach of blisters, from the general circumstance of its greatest extent being along the skin.

I have left erysipelas from injection in the hand of the physician; it put it out. In a little skin case is strikingly similar in its proper formation & treatment to the other case, leaving a magnet. It is necessary to let the vessel or erysipelas cover some width of sound skin in the direction upon before the remedy can come to special.

Dr. Elliotson has recommended, in cases of the bite of poisonous snakes, promptly to elastic the injured limb with the bark of the Laplane tyrannicum. I have never heard of this being done and I am not know on it answer. After the communication of the effect of the bite to the system, I can easily conceive that symptoms might call for epispastics and be [illegible] them.

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Of Cantharides and it's Analysis.

Of all the various substances which physicians have, at different times, employed, for the purpose either of active external stimulation, or of exciting vesication, a universal and decided preference has, at length, been given to Cantharides. It is still, in common cases, the only means employed; and it is almost only in time, or place, where this is difficult to be procured that we can with, or substitute.

This is considered as owing to the circumstance of its producing less pain in blistering than any thing else that has been tried. It can also be managed by particular preparation, so as greatly to increase its activity and diminish the space of time necessary for its operation. When vesication is required in a shorter time than can be made sufficient for the action of cantharides, recourse must be had to means which will be enumerated in a future section.

The animal is too well known by the name of Lytta vesicatoria to excuse filling paper with its natural history. Late French writers, of the first rank, have, however, given an ancient and classic denomination, Cantharis. I, that I am happy to learn our American

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entomologist, T. Say, esq. inclines.

It is said to be mixed, in Spain, with the Cantharides, which must be separated by filtration. In this country, it is more frequently purposely sold with some pacific diluent, have endeavored to procure, as a native American substitute. I mean the Lytta or Cantharis vittata, or which we shall speak. A power of this is of a kind of brown verging towards drab.

The chemical analysis of this day, has, till of late, afforded very unsatisfactory results. The experiments of Lewis, and in later times, of Thouvenel & Beauvoil* appear to have been exposed to all the principal, or, containing nearly all that was known. There have, however, been lately obtained by a writer, whose memoir is given from the Annales de Chimie. Fabroni Robiquet has obtained, from the vesicating extracts which were the ultimate of his first assay, a substance, possessing this power exclusively, and of proper this distinct from either.

Cantharides, by repeated boiling are said by this author to be entirely deprived of the vesicating quality. By treating the residuum with alcohol, a green oil is obtained, said by Beauvoil to possess the singular property of blistering when diluted with water, but not alone. Robiquet denies this substance, as he prepared it, to possess any such quality. But to this I objected that he tried it

* New Lond. med. & phys. journ.; v. 2. p. 567. Ann. Polytec. Repository; vol. [illegible]

[illegible], as by his own account [illegible] [illegible]. [illegible] [illegible] my own [illegible], [illegible] his [illegible] on leaving [illegible] solution in [illegible] [illegible] the human heat [illegible] a declining fire, obtained after 6 hours, a green [illegible] matter, [illegible] by [illegible]. This was applied [illegible] [illegible] and [illegible] without any effect. On boiling the watery extract in alcohol, it was divided into a black, insoluble & a yellow, soluble matter, both of which had been said by former chemists [illegible]. On repeating the process, the black matter was [illegible] entirely deprived of the power. Afterwards, by agitating the yellow matter for several hours in [illegible] ether, & evaporating, [illegible] possessing the peculiar quality in the most concentrated degree. [illegible] was applied to the part it had touched, it propagated the blister ~~through~~ its whole extent. It was found perfectly soluble in [illegible] [illegible] in neither; [illegible] [illegible] [illegible].

The other [illegible] [illegible], with phosphate of lime; and sulphate, [illegible] [illegible] with potash [illegible] in [illegible] in acetic acid, and with [illegible].

[illegible] by [illegible] and there [illegible]. [illegible] disappeared [illegible] as if it underwent a [illegible].

Practical inferences from these experiments, with a view to the medical application of [illegible] seem very restricted indeed. The easy solubility of [illegible] in the various menstruums, by means of [illegible] seems to afford [illegible] for [illegible] preparation.

[illegible] appears [illegible] same [illegible] has been [illegible] properties. [illegible] of milk. [illegible] there is good reason to believe that [illegible] from the [illegible] preparations [illegible] the gradual improvement in the [illegible] applications of science [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

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[illegible]

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[illegible] cannot be

[illegible]

[illegible]

The [illegible]

[illegible] ?

cantharides of Spain?

[illegible] development [illegible] [illegible] [illegible]

The preparations
ue few and ver
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Of the Preparations of Cantharides used for blisters.

The preparations of this substance for the purpose of blistering are two or three simples. Nor do we find very material help from the discoveries of the Chemists. It is very often [illegible] [illegible] to the [illegible] of accident [illegible] of [illegible] new ones.

[illegible] it is mostly mixed with a very moderate heat with diachylon, or with a resinous ointment. [illegible], with [illegible] of [illegible] [illegible] [illegible] powder, over the surface only of the plaster. But this is liable to some objections, as the [illegible] [illegible] the [illegible] of the [illegible] is apt to [illegible] unequal in efficacy, leaving some pieces nearly bare. [illegible], however, it [illegible] a great part of the [illegible] [illegible] [illegible] [illegible] with vinegar or water, so [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible] matter can be diffused in a [illegible] matter [illegible] can be [illegible] [illegible].

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wrought by it to a successful issue. It failed, however, in preserving the life of [illegible].

[illegible] [illegible] ad pedes [illegible] [illegible]
[illegible] [illegible] [illegible].

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] irritation more [illegible] proportional [illegible] [illegible] [illegible] feet of [illegible] [illegible] [illegible] [illegible] three [illegible] mentioned in treatises on the medical application of the remedy, was produced in from 4 to 5 hours. The [illegible] surfaces [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] excepting a little lighter hue.

This preparation has been used with advantage [illegible] [illegible] [illegible] [illegible] [illegible] accompanied with [illegible] [illegible] [illegible] producing [illegible] for use [illegible] [illegible] [illegible] convenience and [illegible] [illegible] effects.

[illegible] [illegible] [illegible] [illegible] [illegible] it [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] difference [illegible] [illegible] [illegible] experiment [illegible] [illegible] the [illegible] substance [illegible] [illegible] [illegible] [illegible] to produce [illegible] [illegible] fluid at all. [illegible] [illegible] [illegible] [illegible] [illegible] like [illegible] that of [illegible] [illegible] matter.

[illegible] prove that this change took place in the cantharides [illegible] not [illegible] [illegible] [illegible] some of the [illegible] [illegible] [illegible] [illegible] with [illegible] [illegible] [illegible].

It was unchanged [illegible] [illegible] [illegible] [illegible] in [illegible]

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There are
texture, we are
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[illegible] peculiar in heat that produces all the [illegible] with upon other.

[illegible] ethereal tincture, [illegible] action [illegible] minutes. [illegible] spell and incant. [illegible] If it [illegible] time. [illegible] action [illegible] of Dr. Harlan's discretion. It produced the [illegible] in all cases mentioned above. In one [illegible] 15 minutes application produced a full [illegible] blister; [illegible] from [illegible] in the [illegible] of the [illegible].

To accelerate the action of cantharides, vesicatories, [illegible], black pepper and [illegible] have been used. A good way is to apply a [illegible] paste and then a [illegible]. The [illegible] may be [illegible]; [illegible] the Cantharis [illegible] blisters more [illegible]. We must reflect that, when there are [illegible] after the vesicle separates, or remain in its texture, [illegible] appears a stimulant of much greater violence [illegible] influence surface, than [illegible] the cantharides.

[illegible] not forget to add, the action of friction.

Of Substitutes.

[illegible] variety of [illegible] raising blisters. The known American species are B. [illegible] B. marginata (in point of view, the right strata of the Linnæans,) and B. cinerea; besides other species, one a very large one, in the collection of T. Say, esq.

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[illegible]

[illegible]

[illegible]

[illegible]

[illegible] described and published.

[illegible] I now propose to [illegible] cantharis meloe, mylabrum, ocanthrus, cicindela and coccinella. The mylabrus cichorii is now used by the Chinese, and is said to be the vesicator of the ancients.

Different vegetables are now proposed as substitutes for cantharides, such as the genera euphorbia, ranunculus, clematis, anemone, &c. It is, however, objected by Barton, that they are apt to be followed by deep ulcerations, difficult of cure. The ranunculus sceleratus, common with us, has been recommended by the present professor Barton, as a prompt, safe, and easy remedy, to be used in cases requiring immediate effects. With the same view, his illustrious predecessor advises the Dipsas punctata, in cases of bites from poisonous snakes. The D. Mezereum and D. laureola are directed to be steeped in vinegar. [illegible] to be peeled, &c. applied to a part previously moistened with vinegar.

Horse-radish, the polygonum hydropiper, pure acetic acid, pure ammonia in solution, & even garlic are all said to vesicate, but it is to be hoped, will not be employed unless in very peculiar circumstances. I wish not to indicate by name the use of garlic as a rubefacient.

Boiling will vesicate, particularly with the addition of salt; but the intolerable pain precludes this use forever.

In cases where an [illegible] is required, boiling water has been used. It is said to produce a more exclusively local effect.

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Joseph Banks

Eclectic Repertory

and yet unpublished. The fame of the first one is now settled, and it's virtues have been subjected to the ordeal of experience. It's virtues have been reported differently by different physicians; but they all agree that it is at least nearly equal to Cantharides from Spain. Dr. Schott* found it blister in 4 or 5 hours, and never left it on longer than 7. A decoction of it, in imitation of Dr. Hawthorne's blistered when rubbed on, in ten minutes. It is, at all events, the proper substitute, where the common kind is not to be had.

By the kindness of the lately mentioned entomologist, I am enabled to prefix a drawing of this insect, male & female. It's definition, from the French Encyclopedia, is as follows.

C. fusca, elytris nigris, vitta marginibusque flavis.

In my specimens, however, the colour of the animal besides the yellow stripes, was dark brown and not black. Head, yellow, with black eyes, and two black stripes down the middle of the forehead. Legs, dark brown. It is found on potatoes, peas, the black-snake-root, &c.

The C. marginata I have found in abundance on the black-snake-root, the Actaea spicata. It is characteristic of the genus that they are sluggish and easily caught.

A species is mentioned by Dr. Burt, of the British army, as discovered by him, at Muttra in the East Indies, and superior to the Spanish fly. Specimens, he says, were sent to Sir Joseph Banks; but I have never heard that they

* Eclectic Repertory; vol. 2. p. 143.

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The neatest method of using it with which I am acquainted is that recommended by the late Dr. Rush; viz, applying a cup quite full & covered with a single fold of cloth. He directs it continued a few minutes.

On the whole there is, at present, not much use to be made of substitutes. Suddenness of operation may, in remote places, render proper the use of the ranunculus sceleratus or of some of the Daphnes; if these really act any quicker than decoction of cantharides in turpentine. Hot water, in extreme cases, will always be at hand, as a last resort.

The cantharis vittata may, perhaps, be considered as of indifferent use with the vesicatoria. I do not despair, indeed, of some future day offering an article to supersede them both. This is no more than has already occurred since the times of Hippocrates & of Aretaeus. There must, among the lytta, mylabra, & other barbarous names with which the catalogues abound, lurk some species more active than these, or even than the East-India melve of Dr. Burt. But for this we must wait till it is developed by accident & time; & content ourselves with prescribing, like our fathers, medicines known by repetition & justified by successful experience.